

# Chapter 4 Cheat Sheet

**STANDARD FORM**

$$f(x) = ax^2 + bx + c$$

**AXIS OF SYMMETRY**

$$x = -\frac{b}{2a}$$

**VERTEX**

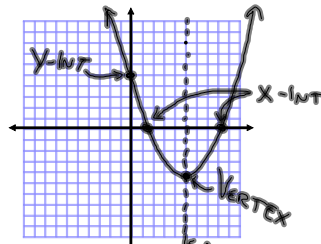
$$\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$$

**Y-INT**

$$(0, c)$$

**X-INT**

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$



**VERTEX FORM**

$$f(x) = a(x-h)^2 + k$$

**h** HORIZONTAL SHIFT ( $\leftarrow^h, \rightarrow^h$ )

**k** VERTICAL SHIFT ( $\uparrow^k, \downarrow^k$ )

**a** VERTICAL STRETCH

$0 < a < 1$  SMUSH (FATTER)

$a > 1$  STRETCH (SKINNIER)

$a < 0$  (FLIP UPSIDEDOWN)

**CONVERT**

STANDARD  $\rightarrow$  VERTEX

$$f(x) = ax^2 + bx + c$$

$$f(x) = a\left(x - \frac{-b}{2a}\right)^2 + f\left(\frac{-b}{2a}\right)$$

VERTEX  $\rightarrow$  STANDARD

① for  $(x-h)^2$

② RABBIT a

③ COMBINE LIKE TERMS

**\* DISCRIMINANT**  $-b \pm \sqrt{\boxed{\phantom{0000}}}$

DISCRIMINANT  $> 0$  2 REAL SOLUTIONS

DISCRIMINANT  $= 0$  1 REAL SOLUTION

DISCRIMINANT  $< 0$  0 REAL SOLUTION

**\*  $i = \sqrt{-1}$   $i^2 = -1$**